



This document includes the Section 6.0, Exterior Topside Surface Preservation, of the Draft EPA "Weather Deck Runoff Characterization Analysis Report" published in 2003. The reference number is: EPA-842-D-06-006

DRAFT

Characterization Analysis Report

Weather Deck Runoff

Section 6.0 - Exterior Topside Surface Preservation

2003

6.0 EXTERIOR TOPSIDE SURFACE PRESERVATION

Exterior topside surface preservation primarily includes restoration of coated (painted or non-skid covered) surfaces and maintenance of flight safety nets. The removal of failed surface coatings has the potential to contribute to deck runoff primarily in the form of paint chips, non-skid material, and rust and other corrosion by-products. Paint drips do not have the potential to contribute to deck runoff because drop cloths are used while applying the paint and any drips that do not fall on the drop cloth are spot cleaned with a rag and solvent immediately. Paint chips, non-skid material, and rust and other corrosion by-products have the potential to become trapped in the rough deck surface and subsequently contribute to deck runoff discharge within the contiguous zone. When the exterior topside surfaces are cleaned outside 12 nm, there would only be residual constituents in the discharge within 12 nm. The survey team found that the flight safety net maintenance, which consists of applying MIL-G-23549 grease to hinge pins and scrubbing netting outside of 12 nm, does not contribute to deck runoff.

6.1 RESTORATION OF PAINTED SURFACES

The survey team obtained information on the restoration of painted surfaces during every shipboard assessment. Based on these observations, the survey team determined that paint chips and rust and other corrosion by-products that do not fall on the drop cloth and are not recovered by crew actions (sweeping, mopping or vacuuming), may wash overboard into the surrounding waters and are the primary constituents that have the potential to contribute to deck runoff. However, the survey team was unable to accurately estimate the amount.

6.1.1 AOE 6 Class

The crew removes deck and superstructure paint using needle guns, disc sanders, grinders, sandpaper and wire brushes. No chemical paint removers are used. Waste paint debris is containerized and turned into the HAZMINCEN for disposal ashore. Surfaces are painted using brushes and rollers; they are rough-sanded and then wiped-down with a mixture of general purpose detergent and freshwater prior to painting. If the crew is touching up the hull paint while the vessel is in port, drop cloths are suspended between the vessel and the pier to catch paint debris and paint drips (Wenzel, 2000e).

6.1.2 CV/CVN 68 Class

The flight deck is covered with a non-skid surface coating, which is removed and applied by a contractor during the vessels' periods of availability. Only spot repairs of small areas are made while underway. If spot repairs are required, the crew removes the non-skid using hand operated deck grinding machines. No chemical agents are used to help remove the non-skid surface. Waste materials from the non-skid removal are swept, containerized, and turned into the HAZMINCEN for disposal ashore. Deck maintenance and preservation does not contribute to deck runoff (Wenzel *et al.*, 2001b).

6.1.3 DDG 51 Class

Deck and superstructure paint is applied using brushes and rollers. Paint removal methods include needle guns, disc grinders, sandpaper and wire brushes. Neither the needle guns nor the disc grinders on the vessel surveyed by the team were vacuum-assisted. During the assessment,

the survey team observed a sailor removing paint from a metal door using a grinder. The sailor had taken the precaution of placing the metal door on a drop cloth to contain the debris; upon completion of his task, the debris that had projected beyond the drop cloth was swept, containerized, and turned into the vessel's HAZMINCEN. All weather deck surfaces are coated with non-skid material that is applied/removed by contractor personnel during the vessel's repair availability period. Although the crew exercises caution and takes preventive measures to ensure paint debris and non-skid material do not enter the surrounding water, paint chips and non-skid material do have the potential to contribute to deck runoff during deck and superstructure maintenance and preservation (Wenzel, 2000b).

6.1.4 LHD 1 Class

A fresh non-skid surface coating was applied to the flight deck ten months prior to the assessment. All of the vessels surveyed have indicated that only spot repairs of the non-skid surface are made when underway; new non-skid is removed and applied by a contractor during vessel's periods of availability. Spot repairs had not been made since the vessel began its deployment three months prior to the assessment. The crew stated that if spot repairs are required prior to returning to port, they will remove the non-skid using hand operated deck grinding machines, no chemical removers will be used. Waste materials will be swept, containerized, and turned into the HAZMINCEN for disposal ashore. As a result, flight deck maintenance and preservation does not contribute to deck runoff (Wenzel *et al.*, 2001a).

6.1.5 MCM 1 Class

MCM 1 Class vessels are constructed of glass reinforced plastic, sheathed wood (i.e., laminated oak framing and Douglas fir planking), and deck sheathing. Care is taken to maintain and preserve the vessels' hull, decks, and superstructure. Surfaces are cleaned with freshwater and a cleaning compound (Simple GreenTM) prior to painting, and nearly 80 % of the time, only sandpaper is used to prepare the surface for painting. Deck/superstructure paint is applied using brushes and rollers and removed using sandpaper, grinders, or vacuum-assist disc sanders. No chemical paint removers are used in the vessel's preservation process. Spray painting is not performed onboard the vessel, and no solvents or thinners are used when painting. Waste materials are swept and containerized for shoreside disposal. Almost all (approximately 90 % to 95 %) of the painting is performed while pierside. The remaining 5 % to 10 % is limited to touch-up work which is performed when underway. Brushes and rollers are cleaned with solvents in the paint locker below deck. Activities conducted in the paint locker do not contribute to deck runoff (Wenzel, 2000c).

6.1.6 WLM 175 Class

Other than touch-up painting of buoys, no painting is performed underway on these vessels. The vessels' hull and superstructure are painted only in port and is normally limited to touch up painting. Complete hull painting is performed during dry dock availability. Surface preparation is performed using a wire brush. All residual paint chips are swept-up and containerized for disposal ashore. The surveyed hull was painted once in the 14 months prior to the survey team's assessment. Paint used by the surveyed WLM 175 Class vessel is manufactured by Interlux. Specific color information is Interlac 800, White; Interlux Premium Yacht Enamel #344, International Orange; and Interlux Brightside Polyurethane #4253, Ocean Blue. These paints are

the primary materials that contribute to deck runoff in the form of paint chips due to deck/superstructure maintenance and preservation that arise from touchup painting (Wenzel, 2000a). However, while the surveyed cutter reported use of Interlux paint, this is not representative of the WLM 175 fleet. COMDTINST M10360.3B, Coating and Color Manual, does not currently authorize Interlux paint. Inorganic or organic zinc primers w/ either Epoxy Polysiloxane (Ameron PSX-700) or Silicone Alkyd Enamel (MIL-PRF-24635) as a topcoat are authorized topside paint systems. [Note: this paint system applies to all exterior topside steel surfaces in CG fleet]. The specific color scheme used is listed in Chapter 11 of the COMDTINST M10360.3B, using the FED-STD-595 standard color number (U.S. Coast Guard, 2001b).

6.1.7 WPB 110 Class

The crew removes deck and superstructure paint from WPBs using needle guns, disc sanders with recovery vacuum, palm sanders with dust collection bags, sandpaper, and wire brushes. No chemical paint removers are used. Paint debris is swept and containerized for disposal ashore. The hull above the waterline is painted every six months, and is rough-sanded and wiped-down with denatured alcohol and rags prior to painting the surfaces with brushes and rollers. The crew uses paint manufactured by Interlux; specific color information is Interlac 800, White; Interlux Premium Yacht Enamel #344, International Orange; and Interlux Brightside Polyurethane #4253, Ocean Blue (Wenzel, 2000d). However, while the surveyed cutter reported use of Interlux paint, this is not representative of the WPB 110 fleet. COMDTINST M10360.3B, Coating and Color Manual, does not authorize Interlux paint. Inorganic or organic zinc primers w/ either Epoxy Polysiloxane (Ameron PSX-700) or Silicone Alkyd Enamel (MIL-PRF-24635) as a topcoat are authorized topside paint systems. [Note: This paint system applies to all exterior topside steel surfaces in CG fleet]. The specific color scheme used is listed in Chapter 11 of the COMDTINST M10360.3B, using the FED-STD-595 standard color number (U.S. Coast Guard, 2001b).

6.1.8 Painting and Preservation

Shipboard maintenance and preservation activities are conducted both in port and underway on all Armed Forces vessels. Factors that affect the frequency and scope of the maintenance and preservation requirements include:

- Vessel size (larger vessels require more paint related maintenance);
- Vessel age (older vessels require frequent upkeep);
- Operational requirements (air-capable vessels require more repair/preservation due to aircraft operations);
- Climatic conditions (vessels operating in the Gulf are subjected to sand storms; vessels operating in the North Atlantic are subject to ice storms); and
- Manning level and crew experience (minimal manning levels may result in less preservation; lower experience levels may result in poor preservation practices).

When the vessel's crew followed good work practices, including drop cloths spread on the deck under and around the work area, the majority of the paint debris remains on the drop cloth. The following devices are used: sandpaper, wire brushes, needle guns, grinders, chipping hammers, and deck crawlers. Some of these devices are equipped with vacuum recovery systems. During cleanup operations, the crew sweeps and containerizes the debris for disposal. Vacuum cleaners

are then used to remove fine debris not recovered during sweeping. Immediately following the cleanup process, the survey team visually observed the deck surfaces to identify the presence of paint chips on the deck surface; no paint chips were noted during any of the assessments. As a result, the survey team cannot quantify, or reasonably estimate, a release or potential release of constituents resulting from this process (Wenzel *et al.*, 2001a).

Table 6-1— Potential Discharge Materials for Restoration of Painted Surfaces

Potential Discharge Material	Potential Discharge Volume (gal/fleet-yr)	Bulk Constituents	CAS #	Composition (%)	Constituent Mass Loading (gal/fleet-yr)	Any BCCs Present?
Paint chips/debris (If below waterline)	Unknown	Copper as cuprous oxide	7440508	47	Unknown	Reduction
		Zinc as zinc oxide	7440666	15	Unknown	Reduction
Paint chips/debris (If above waterline)	Unknown	Unknown	---	Unknown	Unknown	None

6.2 FLIGHT DECK SAFETY NETS

Flight deck safety nets are located on all air capable vessels to provide a measure of protection against personnel falling overboard. The survey team observed and documented the maintenance of flight deck safety nets during the AOE 6, CV/CVN 68, DDG 51, and LHD 1 Class assessments. Because cleaning of safety nets occurs outside 12 nm from shore, any effluent generated is not subject to UNDS.

6.3 PERFORMANCE OBJECTIVE AND ACTIVITIES

The objective for this exterior topside surface preservation is for the vessel's responsible party to prevent the discharge of rust (and other corrosion by-products), cleaning compounds, paint chips, non-skid material fragments, and other materials associated with exterior topside surface preservation that may negatively impact water quality. Activities that could be performed to meet this performance objective include, but are not limited to: performing general housekeeping, such as sweeping and/or mopping, on the affected areas; using drop cloths when removing and applying paint; and using vacuum-assisted needle guns, sanders, and grinders.

Naval Ship's Technical Manual (NSTM) Chapter 631, the Preservation of Ships in Service, requires vessels to perform general housekeeping while conducting paint removal and application. Any paint chips that are collected are held for proper disposal at a shoreside HAZMINCEN (Navy, 1999). Performing general housekeeping following painting activities prevents the discharge of rust, cleaning compounds associated with painting activities, paint chips, and other materials associated with painting activities from contributing to deck runoff.

Using of drop cloths during both paint removal and application collects paint chips and over spray before they are deposited on the deck and contribute to deck runoff. Drop cloths are reused until their condition warrants disposal. All paint chips and unusable drop cloths are collected and held for proper disposal at a shoreside HAZMINCEN (Navy, 1999, 2002).

Some paint removal equipment (e.g., needle guns, sanders, and grinders) have built in vacuums that collect paint chips and dust as they are generated, reducing the amount of constituents that could be deposited on the deck and contribute to deck runoff. A vacuum-assisted system consists of a central vacuum unit with the individual tools attached. Various sizes of vacuum-assisted systems are available, from single tool to ten tool units. The vacuum bags can be either disposable or reusable (Clayton Associates, 2001). For Navy vessels, the chips, dust, and disposable bags are removed from the vacuum for proper disposal at a shoreside HAZMINCIN (OPNAVINST 5090.1B). For USCG vessels paint chips, dust, and disposable bags are disposed of in accordance with Commandant Instruction (COMDTINST) M16478.1B, the Hazardous Waste Management Manual. For U.S. Army vessels, paint chips, dust, and disposable bags are disposed of in accordance with Technical Manual 43-0139, Painting Instructions for Army Materiel.